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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/737,333	12/16/2003	Stephen P. Goldschmidt	9501-73714	7566

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EXAMINER	
TRAN, BINH Q	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 08/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/737,333	GOLDSCHMIDT ET AL.	
	Examiner	Art Unit	
	BINH Q. TRAN	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9,11-16 and 18-51* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9,11-16 and 18-51* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05/15/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to the amendment filed May 15, 2006.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25-37 are rejected under 35 U.S.C. 102 (b) as being anticipated by Hedstrom (Patent Number 4,387,529).

Regarding claims 25-26, Hedstrom discloses a circuit (55, 57) for providing a potential difference across a gap between two electrodes of a utilization device (e.g. 15), the circuit including a power source (e.g. PL1, PL2), a transformer (e.g. T1, T2) including a primary winding (e.g. PR1, PR2) and a secondary winding (e.g. X1-X5) for coupling across the electrodes (e.g. 37, 39), the power source coupled to the primary winding, a first switch (e.g. Q1-Q3) coupled to one of the two terminals of the primary winding, and a second switch (e.g. Q1-Q3) coupled to the other of the two terminals of the primary winding (e.g. PR1, PR2) (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 27, Hedstrom further discloses a dielectric (e.g. 41) interposed between the core and the primary winding (See Figs. 5-7; col. 3, lines 5-58).

Regarding claim 28, Hedstrom further discloses that the secondary winding is wound around the primary winding (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 29, Hedstrom further discloses a dielectric interposed between the primary winding and the secondary winding (e.g. See col. 20-24, lines 1-67).

Regarding claim 30, Hedstrom further discloses that each of the switches further includes a second terminal coupled to the source (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 31, Hedstrom further discloses that the transformer comprises a core, the primary winding surrounding the core, the secondary winding surrounding the primary winding and wound in sections (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 32, Hedstrom further discloses a source of operating frequency signals, the switches being coupled to the source of operating frequency signals (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 33, Hedstrom further discloses that the switches comprise solid-state switches, each switch including a control terminal coupled to the source of operating frequency signals (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 34, Hedstrom further discloses that the switches comprise insulated gate bipolar transistors (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 35, Hedstrom further discloses that the switches comprise field effect transistors (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 36, Hedstrom further discloses that the source of operating frequency signals comprises a source of signals at a frequency which is between about 0.1 times a resonant

frequency of a circuit including the secondary winding and about 10 times said resonant frequency (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Regarding claim 37, Hedstrom further discloses that the electrodes, said circuit including the secondary winding further including the electrodes coupled across the secondary winding (See Figs. 5-7; col. 3, lines 29-67; cols. 4-5, lines 1-67).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caren et al. (Caren) (Patent Number 6,321,531) in view of Hedstrom (Patent Number 4,387,529).

Regarding claims 1, 25-26, and 49-51, Caren discloses a circuit for providing a potential difference across a gap between two electrodes of a utilization device (e.g. 30, 40, 50, 70, 80, 100, 110, 130, 170, 1020), the circuit including a power source (e.g. 1000), a transformer (e.g. 1022) including a primary winding (e.g. 1034) and a secondary winding (e.g. 1036) for coupling across the electrodes (e.g. 101, 102, 174, 176), the power source coupled to the primary winding, a first switch coupled to one of the two terminals of the primary winding, and a second switch coupled to the other of the two terminals of the primary winding (e.g. 1032) (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53). However, Caren fails to disclose the secondary winding having a universal winding configuration and wound in sections.

Hedstrom teaches that it is conventional in the art, to use a transformer including a secondary winding (X1-X5) having a universal winding configuration (e.g. See col. 7, lines 27-48) and wound in sections (e.g. X1-X5) (See Figs. 5-7; col. 4, lines 8-67; col. 5, lines 1-67).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to use a transformer including a secondary winding having a universal winding configuration and wound in sections of Caren, as taught by Hedstrom for the purpose of reducing intra-winding capacitance and electric field, so as to further improve the performance and the efficiency of the transformer.

Regarding claim 2, Caren further discloses that each of the switches further includes a second terminal coupled to the source (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 3, Caren further discloses a source of operating frequency signals, the switches being coupled to the source of operating frequency signals (e.g. See cols. 37-41, lines 1-67).

Regarding claim 4, Caren further discloses that the source of operating frequency signals comprises a source of signals at a frequency which is between about 0.1 times a resonant frequency of a circuit including the secondary winding and about 10 times said resonant frequency (e.g. See cols. 37-41, lines 1-67).

Regarding claim 5, Caren further discloses that the electrodes, said circuit including the secondary winding further including the electrodes coupled across the secondary winding (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 6, Caren further discloses that the switches comprise solid-state switches, each switch including a control terminal coupled to the source of operating frequency signals (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 7, Caren further discloses that the switches comprise insulated gate bipolar transistors (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 9, Caren further discloses that the utilization device comprises one of: a fuel reformer; an oxides of nitrogen trap; and, a soot filter regenerator (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 11, Caren further discloses that the source of operating signals comprises a source of signals having a fundamental frequency between about 20 KHz and about 100 KHz (e.g. See cols. 37-41, lines 1-67).

Regarding claim 12, Caren further discloses that the source of operating frequency signals comprises a source of operating frequency signals having a fundamental frequency between about 500 Hz and about 250 KHz modulated by a modulating signal having a frequency between about 50 Hz and 50 KHz (e.g. See cols. 37-41, lines 1-67).

Regarding claim 13, Caren further discloses that the source of operating frequency signals comprises a source of operating frequency signals having a fundamental frequency between about 20 KHz and about 100 KHz modulated by a modulating signal having a frequency between about 2 KHz and about 10 KHz, the modulating signal having a variable pulsewidth defining a duty cycle (e.g. See cols. 37-41, lines 1-67).

Regarding claim 14, Caren further discloses that the source of operating frequency signals comprises a source of operating frequency signals having a fundamental frequency

between about 20 KHz and about 100 KHz modulated by a modulating signal having a frequency between about 2 KHz and about 10 KHz, the modulating signal having a variable pulsewidth defining a duty cycle between about 20% and about 100% (e.g. See cols. 37-41, lines 1-67).

Regarding claim 15, Caren further discloses that a sensor (e.g. 14, 16) coupled to the source of operating frequency signals and adapted to sense a parameter of the utilization device (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 16, Caren further discloses that the sensor comprises a device for providing a temperature-related output signal (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 18, Caren further discloses that the sensor comprises a timer which times elapsed time since the occurrence of an event (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 19, Caren further discloses that the sensor comprises a device for sensing the time duration of each of multiple states of a system capable of assuming multiple states, for assigning respective weights to the sensed time durations, for accumulating the weighted, sensed time durations, and for providing an output when the accumulated, weighted, sensed time durations reach a threshold (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 20, Caren further discloses that the comprising a device for sensing the time duration of each of multiple states of a system capable of assuming multiple states comprises a device for sensing the time duration of operation of an engine in each of multiple ranges of at least one of engine load and engine torque (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 21, Caren further discloses that the sensor comprises a device for sensing the time duration of operation of an engine in each of multiple ranges of both engine load and engine torque (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 22, Caren further discloses that the sensor comprises a device for providing an output signal related to a concentration of a component of a fluid stream (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 23, Caren further discloses that the sensor comprises a device for providing an output signal related to a concentration of a gas or mixture of gases in a gas stream (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 24, Caren further discloses that the device for providing an output signal related to a concentration of a gas or mixture of gases in a gas stream comprises a device for providing an output signal related to the concentration of at least one of oxides of nitrogen, nitrogen and oxygen in a gas stream (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 27, Caren further discloses a dielectric (e.g. 43, 103, 151, 152) interposed between the core and the primary winding (e.g. See col. 20-24, lines 1-67).

Regarding claim 28, Caren further discloses that the secondary winding is wound around the primary winding (e.g. See col. 20-24, lines 1-67).

Regarding claim 29, Caren further discloses a dielectric interposed between the primary winding and the secondary winding (e.g. See col. 20-24, lines 1-67).

Regarding claim 30, Caren further discloses that each of the switches further includes a second terminal coupled to the source (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 31, Caren further discloses that the transformer comprises a core, the primary winding surrounding the core, the secondary winding surrounding the primary winding and wound in sections (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 32, Caren further discloses a source of operating frequency signals, the switches being coupled to the source of operating frequency signals (e.g. See cols. 37-41, lines 1-67).

Regarding claim 33, Caren further discloses that the switches comprise solid-state switches, each switch including a control terminal coupled to the source of operating frequency signals (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 34, Caren further discloses that the switches comprise insulated gate bipolar transistors (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 35, Caren further discloses that the switches comprise field effect transistors (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 36, Caren further discloses that the source of operating frequency signals comprises a source of signals at a frequency which is between about 0.1 times a resonant frequency of a circuit including the secondary winding and about 10 times said resonant frequency (e.g. See cols. 37-41, lines 1-67).

Regarding claim 37, Caren further discloses that the electrodes, said circuit including the secondary winding further including the electrodes coupled across the secondary winding (e.g. See col. 32, lines 24-67; cols. 33-35, lines 1-67; col. 36, lines 1-53).

Regarding claim 38, Caren further discloses that the utilization device comprises one of: a fuel reformer; an oxides of nitrogen trap; and, a soot filter regenerator (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 39, Caren further discloses that a sensor (e.g. 14, 16) coupled to the source of operating frequency signals and adapted to sense a parameter of the utilization device (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 40, Caren further discloses that the sensor comprises a device for providing a temperature-related output signal (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 41, Caren further discloses that the sensor comprises a device for providing a pressure-related output signal (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 42, Caren further discloses that the sensor comprises a timer which times elapsed time since the occurrence of an event (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 43, Caren further discloses that the sensor comprises a device for sensing the time duration of each of multiple states of a system capable of assuming multiple states, for assigning respective weights to the sensed time durations, for accumulating the weighted, sensed time durations, and for providing an output when the accumulated, weighted, sensed time durations reach a threshold (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 44, Caren further discloses that the comprising a device for sensing the time duration of each of multiple states of a system capable of assuming multiple states comprises a device for sensing the time duration of operation of an engine in each of multiple

ranges of at least one of engine load and engine torque (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 45, Caren further discloses that the sensor comprises a device for sensing the time duration of operation of an engine in each of multiple ranges of both engine load and engine torque (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 46, Caren further discloses that the sensor comprises a device for providing an output signal related to a concentration of a component of a fluid stream (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 47, Caren further discloses that the sensor comprises a device for providing an output signal related to a concentration of a gas or mixture of gases in a gas stream (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Regarding claim 48, Caren further discloses that the device for providing an output signal related to a concentration of a gas or mixture of gases in a gas stream comprises a device for providing an output signal related to the concentration of at least one of oxides of nitrogen, nitrogen and oxygen in a gas stream (e.g. See col. 15, lines 50-67; col. 16, lines 1-60).

Response to Arguments

Applicant's arguments filed May 15, 2006 have been fully considered but they are not completely persuasive. ***Claims 1-7, 9, 11-16, and 18-51 are pending.***

Applicant's arguments with respect to claims 1-7, 9, 11-16, and 18-51 have been considered but are moot in view of the new ground(s) of rejection as discussed above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Binh Tran whose telephone number is (571) 272-4865. The examiner can normally be reached on Monday-Friday from 8:00 a.m. to 4:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reach on (571) 272-4859. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BT
August 03, 2006

Binh Q. Tran
Patent Examiner
Art Unit 3748